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SEQUENCE LISTING

<110> Welcher, Andrew
Wen, Duanzhi
Kelly, Michael

<120> Interferon-Like Molecules and Uses Thereof

<130> 99,372-A

<140>

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<150> 60/169,720

<151> 1999-12-08

<160> 39

<170> PatentIn Ver. 2.0

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<213> Rattus norvegicus

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Leu Lys Tyr Leu Trp Leu Val Ala Leu Val Ala Leu Tyr Ile Ser Pro
5 10 15

atc cag tct cag aac tgt gtg tat ctg gat cat acc atc ttg gaa aac 154
Ile Gln Ser Gln Asn Cys Val Tyr Leu Asp His Thr Ile Leu Glu Asn
20 25 30

atg aaa ctt ctg agc agc atc agg acc acc ttt ccc tta aga tgt cta 202
Met Lys Leu Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu
35 40 45 50

aaa gat atc acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc 250
Lys Asp Ile Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val
55 60 65

cag cat gtg aaa aag gac ata aag gca gtc acc tat cat ata tct tct 298
Gln His Val Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser
70 75 80

ctg gcg cta att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca 346
 Leu Ala Leu Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr
 85 90 95

gag gaa cgc ttg gaa cgt atc aga tcg gga ctt ttc aaa caa gtg cag 394
 Glu Glu Arg Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln
 100 105 110

caa gct cga gag tgc atg gta gac gag gag aac aag aac acg gag gag 442
 Gln Ala Arg Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu
 115 120 125 130

gac agt aca tca caa cat cct cac tca gag ggc ttc aag gca gtc tac 490
 Asp Ser Thr Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr
 135 140 145

ctg gaa ttg aac aag tat ttc ttc aga atc aga aag ttc ctg gta aat 538
 Leu Glu Leu Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn
 150 155 160

aag aaa tac agt ttc tgt gcc tgg aag att gtc gtg gtg gaa ata aga 586
 Lys Lys Tyr Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg
 165 170 175

aga tgt ttc agt ata ttt tac aaa cta ctc aac atg aat tgagaatcat 635
 Arg Cys Phe Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn
 180 185 190

ccagcttcaa gcaagaactt agatagaagt tgtgactgct caaatgtccc caagaacgct 695

tgattctaag gctattgcga gtctgtctgct acacacttcg gacgcaagac ttttcaagggt 755

caggggttcaa ggtagtagac tcaaaggaag tcttatgtta agcaaaaagaa aaatttcagt 815

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<213> Rattus norvegicus

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Glu Asn Met Lys Leu Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg
 35 40 45

Cys Leu Lys Asp Ile Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu
 50 55 60

Tyr Val Gln His Val Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile
65 70 75 80

Ser Ser Leu Ala Leu Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu
85 90 95

Ala Thr Glu Glu Arg Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln
100 105 110

Val Gln Gln Ala Arg Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr
115 120 125

Glu Glu Asp Ser Thr Ser Gln His Pro His Ser Glu Gly Phe Lys Ala
130 135 140

Val Tyr Leu Glu Leu Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu
145 150 155 160

Val Asn Lys Lys Tyr Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu
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180 185 190

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<213> Rattus norvegicus

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Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val Lys Lys
35 40 45

Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu Ile Ile
50 55 60

Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg Leu Glu
65 70 75 80

Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg Glu Cys
85 90 95

Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr Ser Gln
100 105 110

His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu Asn Lys
115 120 125

Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr Ser Phe

130

135

140

Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe Ser Ile
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Phe Tyr Lys Leu Leu Asn Met Asn
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<222> (575)..(1195)

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 gatttgggtg agtgagtgag tgagtgagtg catggactca cagcttttgg ctttctgaaa 240
 taccctgcat cagtcttggt atgatgattc cttagtgtg ggatggatca tccaggcatt 300
 taaggtaaca cgatggtaat tctttgctca tttttcaggg aaaaaaaaaa gttatcactt 360
 ccaaagtcgg catagtcacc cgaagtaaaa aaaaaaaaaa aaaaaaaaag cctcagaggc 420
 aaaggaaagg ggccgcaacc ttggttaact gtgaaatgac gaatgagaaa actcctcctg 480
 ctgaagatat tcaggtatat aaaggcacat gaaggaaaac tcaaaacatc attgtcatat 540
 acacatcttc tggatttttt agcttgcaaa aaaa atg agc acc aaa cct gat atg 595
 Met Ser Thr Lys Pro Asp Met

1

5

att caa aag tgt ttg tgg ctt gag atc ctt atg ggt ata ttc att gct 643
 Ile Gln Lys Cys Leu Trp Leu Glu Ile Leu Met Gly Ile Phe Ile Ala
 10 15 20

ggc acc cta tcc ctg gac tgt aac tta ctg aac gtt cac ctg aga aga 691
 Gly Thr Leu Ser Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg
 25 30 35

gtc acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt 739
 Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe
 40 45 50 55

cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa gag 787
Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu
60 65 70

ttt ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc ttc 835
Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe
75 80 85

tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc ttc 883
Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe
90 95 100

aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt gat 931
Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp
105 110 115

cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat gaa 979
Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu
120 125 130 135

aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca gaa 1027
Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu
140 145 150

gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc cac 1075
Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His
155 160 165

agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc tgg 1123
Arg Ile Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp
170 175 180

gag att gtc cga gtg gaa atc aga aga tgt ttg tat tac ttt tac aaa 1171
Glu Ile Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys
185 190 195

ttt aca gct cta ttc agg agg aaa taaggatatat ttttgaatt aaaattcctt 1225
Phe Thr Ala Leu Phe Arg Arg Lys
200 205

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tgtcctgtaa gcctgtcctc agttggactg gtagcctcgg aacatcaggg acactcacct 1345

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aatggctaga ggatagggag cagagaatgt tgcaaaatgg taacatttca atgacttaac 1585

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1836

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Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn Leu Arg His Leu
35 40 45

Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu Arg Glu Asn Ile
50 55 60

Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys
65 70 75 80

Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn
85 90 95

Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu Arg His Leu Lys
100 105 110

Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys
115 120 125

Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys Glu Met Lys Glu
130 135 140

Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln Leu Ser Ser Leu
145 150 155 160

Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe Leu Lys Glu Lys
165 170 175

Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val Glu Ile Arg Arg
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Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe Arg Arg Lys
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<212> PRT

<213> Homo sapiens

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Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr Gln
35 40 45

Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu Gln
50 55 60

Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu Arg
65 70 75 80

His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr Leu
85 90 95

Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys Glu
100 105 110

Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln Leu
115 120 125

Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe Leu
130 135 140

Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val Glu
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165 170 175

Arg Lys

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<212> PRT

<213> Homo sapiens

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Ser Ser Asn Phe Gln Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg
35 40 45

Leu Glu Tyr Cys Leu Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu
50 55 60

Ile Lys Gln Leu Gln Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile

65	70	75	80
Tyr Glu Met Leu Gln Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser	85	90	95
Ser Thr Gly Trp Asn Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val	100	105	110
Tyr His Gln Ile Asn His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu	115	120	125
Lys Glu Asp Phe Thr Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys	130	135	140
Arg Tyr Tyr Gly Arg Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser	145	150	155
His Cys Ala Trp Thr Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr	165	170	175
Phe Ile Asn Lys Leu Thr Gly Tyr Leu Arg Asn	180	185	

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 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Rat IFN-like polypeptide cDNA insert and partial pAMG21 vector sequence

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 <222> (4)..(510)

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ctg agc agc atc cgt acc acc ttt cct ctg cgt tgt ctg aaa gat atc	96
Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile	
20 25 30	
acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc cag cat gtg	144
Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val	
35 40 45	
aaa aag gac ata aag gca gtc acc tat cat ata tct tct ctg gcg cta	192
Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu	
50 55 60	
att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca gag gaa cgc	240
Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg	

65	70	75	
ttg gaa cgt atc aga tcg gga ctt ttc aaa caa gtg cag caa gct cga			288
Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg			
80	85	90	95
gag tgc atg gta gac gag gag aac aag aac acg gag gag gac agt aca			336
Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr			
100	105	110	
tca caa cat cct cac tca gag ggc ttc aag gca gtc tac ctg gaa ttg			384
Ser Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu			
115	120	125	
aac aag tat ttc ttc aga atc aga aag ttc ctg gta aat aag aaa tac			432
Asn Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr			
130	135	140	
agt ttc tgt gcc tgg aag att gtc gtg gtg gaa att cgt cgt tgt ttc			480
Ser Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe			
145	150	155	
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Ser Ile Phe Tyr Lys Leu Leu Asn Met Asn			
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polypeptide cDNA insert and partial pAMG21 vector			
sequence			
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Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile Thr			
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Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val Lys			
35	40	45	
Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu Ile			
50	55	60	
Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg Leu			
65	70	75	80
Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg Glu			
85	90	95	
Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr Ser			

100	105	110
Gln His Pro His Ser Glu Gly Phe Lys Ala Val Tyr Leu Glu Leu Asn		
115	120	125
Lys Tyr Phe Phe Arg Ile Arg Lys Phe Leu Val Asn Lys Lys Tyr Ser		
130	135	140
Phe Cys Ala Trp Lys Ile Val Val Val Glu Ile Arg Arg Cys Phe Ser		
145	150	155
Ile Phe Tyr Lys Leu Leu Asn Met Asn		
165		

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<220>
 <223> Description of Artificial Sequence: Rat IFN-like
 polypeptide cDNA insert and partial pAMG21 vector
 sequence

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 <222> (4)..(510)

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ctg agc agc atc cgt acc acc ttt cct ctg cgt tgt ctg aaa gat atc	96
Leu Ser Ser Ile Arg Thr Thr Phe Pro Leu Arg Cys Leu Lys Asp Ile	
20 25 30	
acg gat ttt gag ttt cct caa gag att ctg ctg tac gtc cag cat gtg	144
Thr Asp Phe Glu Phe Pro Gln Glu Ile Leu Leu Tyr Val Gln His Val	
35 40 45	
aaa aag gac atc aag gca gtc acc tat cat atc tct tct ctg gcg ctg	192
Lys Lys Asp Ile Lys Ala Val Thr Tyr His Ile Ser Ser Leu Ala Leu	
50 55 60	
att att ttc agt ctt aaa gac tcc atc tcc ctg gcg aca gag gaa cgc	240
Ile Ile Phe Ser Leu Lys Asp Ser Ile Ser Leu Ala Thr Glu Glu Arg	
65 70 75	
ttg gaa cgt atc cgt tct ggt ctt ttc aaa caa gtg cag caa gct cgt	288
Leu Glu Arg Ile Arg Ser Gly Leu Phe Lys Gln Val Gln Gln Ala Arg	
80 85 90 95	
gag tgc atg gta gac gag gag aac aag aac acg gag gag gac agt aca	336
Glu Cys Met Val Asp Glu Glu Asn Lys Asn Thr Glu Glu Asp Ser Thr	
100 105 110	

tca	caa	cat	cct	cac	tca	gag	ggc	ttc	aag	gca	gtc	tac	ctg	gaa	ttg	384
Ser	Gln	His	Pro	His	Ser	Glu	Gly	Phe	Lys	Ala	Val	Tyr	Leu	Glu	Leu	
			115					120					125			

aac	aag	tat	ttc	ttc	cgt	atc	cgt	aag	ttc	ctg	gta	aat	aag	aaa	tac	432
Asn	Lys	Tyr	Phe	Phe	Arg	Ile	Arg	Lys	Phe	Leu	Val	Asn	Lys	Lys	Tyr	
		130					135					140				

agt	ttc	tgt	gcc	tgg	aag	att	gtc	gtg	gtg	gaa	att	cgt	cgt	tct	ttc	480
Ser	Phe	Cys	Ala	Trp	Lys	Ile	Val	Val	Val	Glu	Ile	Arg	Arg	Ser	Phe	
	145					150				155						

agt	att	ttt	tac	aaa	ctg	ctg	aac	atg	aat	taatggatcc	520
Ser	Ile	Phe	Tyr	Lys	Leu	Leu	Asn	Met	Asn		
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 <212> PRT
 <213> Artificial Sequence

<220>
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1				5					10					15	

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			20					25					30		

Asp	Phe	Glu	Phe	Pro	Gln	Glu	Ile	Leu	Leu	Tyr	Val	Gln	His	Val	Lys
	35					40						45			

Lys	Asp	Ile	Lys	Ala	Val	Thr	Tyr	His	Ile	Ser	Ser	Leu	Ala	Leu	Ile
	50					55					60				

Ile	Phe	Ser	Leu	Lys	Asp	Ser	Ile	Ser	Leu	Ala	Thr	Glu	Glu	Arg	Leu
65				70					75					80	

Glu	Arg	Ile	Arg	Ser	Gly	Leu	Phe	Lys	Gln	Val	Gln	Gln	Ala	Arg	Glu
				85				90						95	

Cys	Met	Val	Asp	Glu	Glu	Asn	Lys	Asn	Thr	Glu	Glu	Asp	Ser	Thr	Ser
		100						105					110		

Gln	His	Pro	His	Ser	Glu	Gly	Phe	Lys	Ala	Val	Tyr	Leu	Glu	Leu	Asn
	115					120						125			

Lys	Tyr	Phe	Phe	Arg	Ile	Arg	Lys	Phe	Leu	Val	Asn	Lys	Lys	Tyr	Ser
	130					135					140				

Phe	Cys	Ala	Trp	Lys	Ile	Val	Val	Val	Glu	Ile	Arg	Arg	Ser	Phe	Ser
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145

150

155

160

Ile Phe Tyr Lys Leu Leu Asn Met Asn
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<210> 12

<211> 568

<212> DNA

<213> Artificial Sequence

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polypeptide cDNA insert and partial pAMG21 vector
sequence

<220>

<221> CDS

<222> (22)..(558)

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cgt gtt acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca	99
Arg Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser	
15 20 25	
ttt cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa	147
Phe Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln	
30 35 40	
gag ttt ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc	195
Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala	
45 50 55	
ttc tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc	243
Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr	
60 65 70	
ttc aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt	291
Phe Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu	
75 80 85 90	
gat cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat	339
Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn	
95 100 105	
gaa aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca	387
Glu Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser	
110 115 120	
gaa gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc	435
Glu Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe	
125 130 135	

cac agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc 483
 His Arg Ile Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala
 140 145 150

tgg gag att gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac 531
 Trp Glu Ile Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr
 155 160 165 170

aaa ttt acc gct ctg ttc cgt cgt aaa taatggatcc 568
 Lys Phe Thr Ala Leu Phe Arg Arg Lys
 175

<210> 13

<211> 179

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Rat IFN-like
 polypeptide cDNA insert and partial pAMG21 vector
 sequence

<400> 13

Met Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn
 1 5 10 15

Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu
 20 25 30

Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr
 35 40 45

Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu
 50 55 60

Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu
 65 70 75 80

Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr
 85 90 95

Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys
 100 105 110

Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln
 115 120 125

Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe
 130 135 140

Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val
 145 150 155 160

Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe
 165 170 175

Arg Arg Lys

<210> 14

<211> 568

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Human IFN-like
polypeptide cDNA insert and partial pAMG21 vector
sequence

<220>

<221> CDS

<222> (22)..(558)

<400> 14

tctagaaagg aggaataaca t atg tgt aac ctg ctg aac gtt cac ctg cgt	51
Met Cys Asn Leu Leu Asn Val His Leu Arg	
1 5 10	
cgt gtt acc tgg caa aat ctg aga cat ctg agt agt atg agc aat tca	99
Arg Val Thr Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser	
15 20 25	
ttt cct gta gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa	147
Phe Pro Val Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln	
30 35 40	
gag ttc ctg caa tac acc caa cct atg aag agg gac atc aag aag gcc	195
Glu Phe Leu Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala	
45 50 55	
ttc tat gaa atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc	243
Phe Tyr Glu Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr	
60 65 70	
ttc aaa tat tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt	291
Phe Lys Tyr Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu	
75 80 85 90	
gat cag caa gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat	339
Asp Gln Gln Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn	
95 100 105	
gaa aat gaa gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca	387
Glu Asn Glu Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser	
110 115 120	
gaa gcc agg gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc	435
Glu Ala Arg Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe	
125 130 135	
cac agg ata gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc	483
His Arg Ile Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala	

140	145	150	
tgg gag att gtc cga gtg gaa atc cgt cgt tct ctg tac tac ttt tac			531
Trp Glu Ile Val Arg Val Glu Ile Arg Arg Ser Leu Tyr Tyr Phe Tyr			
155	160	165	170

aaa ttt acc gct ctg ttc cgt cgt aaa taatggatcc	568
Lys Phe Thr Ala Leu Phe Arg Arg Lys	
175	

<210> 15
 <211> 179
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Human IFN-like polypeptide cDNA insert and partial pAMG21 vector sequence

<400> 15
 Met Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr Trp Gln Asn
 1 5 10 15
 Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val Glu Cys Leu
 20 25 30
 Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu Gln Tyr Thr
 35 40 45
 Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu Met Ser Leu
 50 55 60
 Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr Trp Lys Glu
 65 70 75 80
 Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln Ala Glu Tyr
 85 90 95
 Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu Asp Met Lys
 100 105 110
 Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg Val Pro Gln
 115 120 125
 Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile Asp Asn Phe
 130 135 140
 Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile Val Arg Val
 145 150 155 160
 Glu Ile Arg Arg Ser Leu Tyr Tyr Phe Tyr Lys Phe Thr Ala Leu Phe
 165 170 175
 Arg Arg Lys

<210> 16
 <211> 556
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Human IFN-like
 polypeptide cDNA insert and partial pAMG21 vector
 sequence

<220>
 <221> CDS
 <222> (1)..(546)

<400> 16
 cat atg ctg gac tgt aac ctg ctg aac gtt cac ctg cgt cgt gtt acc 48
 His Met Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr
 1 5 10 15

tgg caa aat ctg aga cat ctg agt agt atg agc aat tca ttt cct gta 96
 Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val
 20 25 30

gaa tgt cta cga gaa aac ata gct ttt gag ttg ccc caa gag ttt ctg 144
 Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu
 35 40 45

caa tac acc caa cct atg aag agg gac atc aag aag gcc ttc tat gaa 192
 Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu
 50 55 60

atg tcc cta cag gcc ttc aac atc ttc agc caa cac acc ttc aaa tat 240
 Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr
 65 70 75 80

tgg aaa gag aga cac ctc aaa caa atc caa ata gga ctt gat cag caa 288
 Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln
 85 90 95

gca gag tac ctg aac caa tgc ttg gag gaa gac gag aat gaa aat gaa 336
 Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu
 100 105 110

gac atg aaa gaa atg aaa gag aat gag atg aaa ccc tca gaa gcc agg 384
 Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg
 115 120 125

gtc ccc cag ctg agc agc ctg gaa ctg agg aga tat ttc cac agg ata 432
 Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile
 130 135 140

gac aat ttc ctg aaa gaa aag aaa tac agt gac tgt gcc tgg gag att 480
 Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile
 145 150 155 160

gtc cga gtg gaa atc cgt cgt tgc ctg tac tac ttt tac aaa ttt acc 528
 Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr
 165 170 175

gct ctg ttc cgt cgt aaa taatggatcc 556
 Ala Leu Phe Arg Arg Lys
 180

<210> 17
 <211> 182
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Human IFN-like
 polypeptide cDNA insert and partial pAMG21 vector
 sequence

<400> 17
 His Met Leu Asp Cys Asn Leu Leu Asn Val His Leu Arg Arg Val Thr
 1 5 10 15
 Trp Gln Asn Leu Arg His Leu Ser Ser Met Ser Asn Ser Phe Pro Val
 20 25 30
 Glu Cys Leu Arg Glu Asn Ile Ala Phe Glu Leu Pro Gln Glu Phe Leu
 35 40 45
 Gln Tyr Thr Gln Pro Met Lys Arg Asp Ile Lys Lys Ala Phe Tyr Glu
 50 55 60
 Met Ser Leu Gln Ala Phe Asn Ile Phe Ser Gln His Thr Phe Lys Tyr
 65 70 75 80
 Trp Lys Glu Arg His Leu Lys Gln Ile Gln Ile Gly Leu Asp Gln Gln
 85 90 95
 Ala Glu Tyr Leu Asn Gln Cys Leu Glu Glu Asp Glu Asn Glu Asn Glu
 100 105 110
 Asp Met Lys Glu Met Lys Glu Asn Glu Met Lys Pro Ser Glu Ala Arg
 115 120 125
 Val Pro Gln Leu Ser Ser Leu Glu Leu Arg Arg Tyr Phe His Arg Ile
 130 135 140
 Asp Asn Phe Leu Lys Glu Lys Lys Tyr Ser Asp Cys Ala Trp Glu Ile
 145 150 155 160
 Val Arg Val Glu Ile Arg Arg Cys Leu Tyr Tyr Phe Tyr Lys Phe Thr
 165 170 175
 Ala Leu Phe Arg Arg Lys
 180

<210> 18
 <211> 11
 <212> PRT
 <213> Human immunodeficiency virus type 1

<400> 18
 Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg
 1 5 10

<210> 19
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Internalizing
 domain derived from HIV tat protein

<400> 19
 Gly Gly Gly Gly Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg
 1 5 10 15

<210> 20
 <211> 21
 <212> DNA
 <213> Rattus norvegicus

<400> 20
 atgacactga agtattttatg g 21

<210> 21
 <211> 21
 <212> DNA
 <213> Rattus norvegicus

<400> 21
 attcatgttg agtagtttgt a 21

<210> 22
 <211> 48
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: PCR primer
 1825-22

<400> 22
 gaataacata tgtgtgtata tctcgatcat actatcttgg agaatatg 48

<210> 23
 <211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
1825-21

<400> 23

ccgcggatcc attaatcat gttcagcagt ttgtaaaaa tactgaaaca acgacgaatt 60

tcc

63

<210> 24

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
1909-56

<400> 24

ccgcggatcc attaatcat gttcagcagt ttgtaaaaa tactgaaaga acgacgaatt 60

tcc

63

<210> 25

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
1967-32

<400> 25

ttgatctaga aaggaggaat aacatatgtg taacctgctg aacgttcacc tgcgtcgtgt 60

tacctgg

67

<210> 26

<211> 71

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
1982-14

<400> 26

ccgcggatcc attatttacg acggaacaga gcggtaaatt tgtaaaagta gtacaggcaa 60

cgacgatttc c

71

<210> 27
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1967-33

<400> 27
ccgcggatcc attattttacg acggaacaga gcggtaaatt tgtaaaagta gtacagagaa 60
cgacggattt cc 72

<210> 28
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
2103-87

<400> 28
aaggagcata tgctggactg taacctgctg aacgttcac 39

<210> 29
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1200-54

<400> 29
gttattgctc agcggtggca 20

<210> 30
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1847-77

<400> 30
cccaagctta ccatgacact gaagtattta tg 32

<210> 31
<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
1847-78

<400> 31

aaggaaaaaa gcggccgcat tcattgttgag tag

33

<210> 32

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
1896-56

<400> 32

acgcgtcgac tcattcaattc atgttgagta gtttg

35

<210> 33

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
1896-57

<400> 33

aaggaaaaaa gcggccgctc atcaattcat gttgagtag

39

<210> 34

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
1954-45

<400> 34

acgcgtcgac ttattatttc ctctgaata g

31

<210> 35

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

1954-46

<400> 35
aaggaaaaaa gcggccgctt attatttcct cctgaataga gc 42

<210> 36
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1955-44

<400> 36
cccaagctta ccatgagcac caaacctgat atg 33

<210> 37
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1954-47

<400> 37
cccaagctta ccatgattca aaagtgttg tggc 34

<210> 38
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1954-48

<400> 38
aaggaaaaaa gcggccgcgc ggccctcgat ttctctctg aatagagctg taa 53

<210> 39
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer
1954-49

<400> 39
aaggaaaaaa gcggccgctt tcctctctgaa tagagctgta a 41